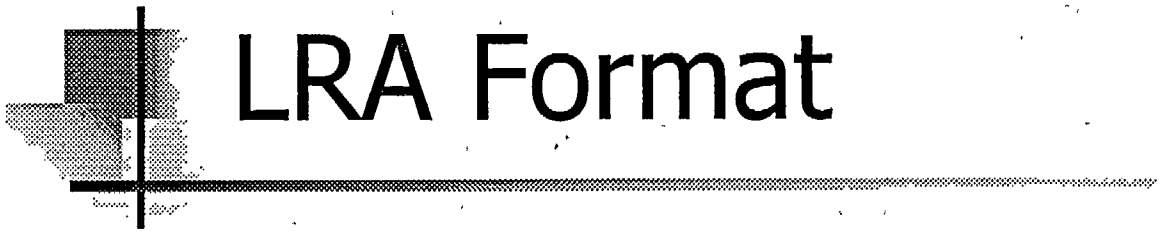
MEETING HANDOUTS

Enclosure 3



LRA Format

Improved SRP-LR Format

Statement of the Problem

- The SRP-LR summary tables are unable to adequately convey the information necessary for license renewal.

Difficulties with SRP-LR format

- Tables are "roll-ups" of detailed GALL items.
  - GALL items may contain several components
  - Introduces uncertainty as to which line items and what components are applicable
  - Materials and environments not listed

Difficulties with SRP-LR format

- SRP-LR tables list aging mechanisms, not just aging effects.
  - If aging mechanisms are not a match, then must explain or imply that aging mechanisms also match.

Difficulties with SRP-LR format

- Difficulties in determining what constitutes "consistent with GALL" given the various GALL line items for each row.
- Format requires lengthy discussions to explain differences with GALL.
- Additional tables are necessary for the items that do not match GALL.
- Many components will be listed in both tables to cover aging mechanisms that are not in GALL.

What SRP-LR/GALL is not -

- Not a scoping document
- Not a substitute for the tools
- Not a complete list of components that should be found in a particular plant

What GALL is -

- Demonstration that a program is adequate
  - To manage certain aging effects
  - For a particular structure or component
  - If the program contains all elements of the referenced GALL program*

*See Introduction to NUREG-1801, "GALL Report Evaluation Process" and "Application of the GALL Report."

Conclusion

GALL is very useful as a tool to demonstrate that a program is adequate to manage an aging effect.

The SRP-LR/GALL summary tables are not the best way to present the information required for license renewal.

Improved SRP-LR Format

- Uses basic six-column format,
- References GALL where appropriate to demonstrate the adequacy of a program,
- Eliminates difficulties in summarizing AMR results using the SRP-LR summary tables and the need for two tables and lengthy discussion in tables.

Improved SRP-LR Format – Section 2

- Scoping section gives results of scoping for systems/structures: in scope or out of scope.
- Tables list component groups, intended functions, and references to tables in Section 3 (hypertext).

Improved SRP-LR Format – Section 3

- Contents of section which introduces the tables:
  - Brief description of system, components, materials, environments – refer to SAR
  - Brief discussion of aging effects for systems
  - List of programs used to manage aging effects and reference FSAR supplement (may be hypertext)
  - Description of how programs manage aging effects (may refer to Appendix B)
  - Discussion of operating experience review for system components
  - Discussion of "consistent with" GALL
- This incorporates NEI 95-10 requirements.

Improved SRP-LR Format – Section 3

- Basic six-column format:
  - Component type
  - Material
  - Environment
  - Aging effect requiring management
  - Aging management program
  - GALL report comparison

Improved SRP-LR Format – Section 3

- Component type
  - Tables are organized by system or system groups (e.g., auxiliary systems)
  - Components are grouped as possible to simplify presentation.

Improved SRP-LR Format – Section 3

- Material and environment
  - This information is clearly stated instead of being implied, as in the SRP-LR summary tables.

Improved SRP-LR Format – Section 3

- Aging effect requiring management
  - Only the aging effect is listed, not the mechanisms.
  - Identified aging effects not in GALL are also listed.

Improved SRP-LR Format – Section 3

- Aging management program
  - The name of the site program is given as hyperlink to Appendix B.
  - Comparison of the site program to the appropriate GALL program is documented in Appendix B.

Improved SRP-LR Format – Section 3

- GALL Comparison
  - Addresses comparison to GALL for component, material, environment, aging effects, and programs
  - Indicate if consistent with GALL or describe differences from GALL

Improved SRP-LR Format – Appendix B

- Appendix B either
  - States that program is consistent with the ten elements described in GALL, or
  - Explains the exceptions to specific elements of the GALL description, or
  - Describes the program in terms of the ten elements in NEI 95-10.
- Appendix B reviews operating experience for the program.

Advantages of Improved SRP-LR Format

- Takes full advantage of the stated purpose of GALL: demonstration of program adequacy.
- Much easier to develop from the individual AMR results.
- Only one table required but consistencies with GALL are still clearly identified for the reviewer.
- Eliminates multiple listings on different tables for the same component.

Advantages of Improved SRP-LR Format

- No need to discuss GALL items that are not applicable or aging mechanisms.
- Specifically lists the material and environment.
- Eliminates confusion of multiple GALL line items per SRP-LR table entry.
- Clearly provides the information required by NEI 95-10.

Advantages of Improved SRP-LR Format

- Greatly reduces the need for lengthy discussions in the tables.
- Eliminates "force-fitting" components into an SRP-LR summary table line item.

Sample Section 3 Table

#	Component Type	Material	Environment	Aging Effect	Program	Notes [GALL Ref]
1	Piping Tubing Valves	Stainless steel	Treated water (borated)	Cracking	Water chemistry control	1 [D1.1-a, D1.4-b]
				Loss of material		3 [NA]
			Ambient air	None identified	None required	4 [NA]
2	Thermowells	Stainless steel	Treated water (borated)	Cracking	Water chemistry control	2 [NA]

1. Component, material, environment, aging effect and program are consistent with GALL.
2. Component is similar to GALL component. Material, environment, aging effect and program are consistent with GALL.
3. Aging effect not identified in GALL.
4. Environment not in GALL.

GALL/SRP Implementation
"Class of '03"

September 24, 2002

Industry Review

Description \ Plant	Ft. Calhoun	Robinson	Ginna	VCS
Number of Section 3 Tables	3	2	2	2
Table 1 = Consistent with GALL	✓	✓	✓	✓
Table 2 = Different from the GALL	✓	✓	✓	✓
Section 2-3 link name	row number	item	line number	AMR item
Separate Column for Item Numbers?	Yes	No	No	Yes
Number of PWR SRP Supergroups for RCS	37	35	36	35
Order of data (Table 2)	?	by component type	by system	?

Industry Review

Description \ Plant	Ft. Calhoun	Robinson	Ginna	VCS
Identifies mat/env combos that have no aging mechanisms	✓ none not applicable	✓ none none required	✓ no aging effects no amp required	✓ none identified none required
Identifies aging mechanisms in Table 2	mixed	✓	✓	✓
Table 2 Headings (different from GALL)	Component Types Material Environment AERMs Program/Activity Justification	Component Commodity Material Environment Aging Effect/Mechanism Aging Management Program Discussion	Component Types Material Environment AERMs Program/Activity Discussion	Component Type Material Environment Aging Effect/Mechanism Program/Activity Discussion

Industry Review

Plant	Section 3 - Table 1 Title (SRP Style)
FCS	TABLE 3.1-1 SUMMARY OF AGING MANAGEMENT PROGRAMS FOR REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL
Robinson	TABLE 3.1-1 REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM AGING MANAGEMENT PROGRAMS EVALUATED IN THE GALL REPORT THAT ARE RELIED ON FOR LICENSE RENEWAL
Ginna	Table 3.2-1 Reactor Coolant System - Aging Management Programs Evaluated in NUREG-1801 that are Relied on for License Renewal
VCS	Table 3.1-1: SUMMARY OF AGING MANAGEMENT PROGRAMS FOR THE REACTOR COOLANT SYSTEM EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR LICENSE RENEWAL

Industry Review

Plant	Section 3 - Table 2 Title (Six-column style)
FCS	TABLE 3.1-2 FCS REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM COMPONENT TYPES SUBJECT TO AGING MANAGEMENT NOT EVALUATED IN NUREG-1801
Robinson	TABLE 3.1-2 REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM AGING MANAGEMENT EVALUATIONS THAT ARE DIFFERENT FROM OR NOT ADDRESSED IN THE GALL REPORT
Ginna	Table 3.2-2 Reactor Coolant System - Component Types Subject to Aging Management not Evaluated in NUREG-1801
VCS	Table 3.1-2: SUMMARY OF AGING MANAGEMENT EVALUATIONS FOR THE REACTOR COOLANT SYSTEM THAT ARE DIFFERENT FROM OR NOT ADDRESSED IN NUREG-1801 BUT ARE RELIED ON FOR LICENSE RENEWAL

Proposal

Industry Proposal

Description	'03	Comment
Number of Section 3 Tables	2	
Section 2-3 link name	item number	
Separate Column for Item Numbers?	Yes	
Table 1 = "Consistent" with GALL	☑	Guidance from letter dated 10/03/2001 from Grimes to Nelson, "Lessons Learned and Observations from the License Renewal Demonstration Project"
Table 2 = Different from the GALL	☑	All items not in Table 1
Number of PWR/BWR SRP Items for Section 3.1	37/20	Section 3.2 = 12/15 (SRP has 11/14) – this is an SRP error, NUREG-1801 Volume 1 Table 2 – 10th item does not match NUREG-1800 Table 3.2-1 10th item. A quick study shows that NUREG-1800 Table 3.2-1 has omitted a row item. Section 3.3 = 25/29 Section 3.4 = 13/10 Section 3.5 = 29/32 Section 3.6 = 5/4

Industry Proposal

Description	'03	Comment
Order of Table 2 data	by system	By system = order that system appears in Section 2
Identifies mat/env combos that have no aging mechanisms	 none identified none required	
Identifies aging mechanisms in Table 2		Identify mechanism if required by referenced aging management program
Table 2 Headings (different from GALL)	**Component Type** **Material** **Environment** **Aging Effect Requiring Management** **Aging Management Programs** **Discussion**	

Industry Proposal

Plant	Section 3 - Table 1 Title (SRP Style)
'03	Table 3.1-1: Reactor Vessel, Internals, and Reactor Coolant System - Summary of Aging Management Programs Evaluated in NUREG-1801 that are Relied on for License Renewal

Plant	Section 3 - Table 2 Title (Six-column style)
'03	Table 3.1-2: Reactor Vessel, Internals, and Reactor Coolant System - Summary of Aging Management Evaluations that are Different from or Not Addressed in NUREG-1801

PROPOSED LRA FORMAT

The staff believes this format will:
- Support the most efficient staff review,
- Make the best use of the GALL and SRP,
- Improve the clarity of aging management review,
- Reduce the applicant's effort in developing the LRA.

Section 2 tables do not link to Section 3 tables.
Details of the aging management review are in the Section 3 tables, so links are not necessary.

Section 3, Table 1 contains a summary of the information in the SRP.
- This table assists the staff review by collecting the information on how the applicant will manage the aging effects (and mechanisms) that are addressed in GALL.
- This table describes the program the applicant will systematically use to manage the aging identified in GALL, including any further evaluation recommended by GALL/SRP. This table will identify whether the applicant intends to systematically use the GALL program or another program to manage the aging identified in GALL. This table will also describe how the applicant will further evaluate the aging, as recommended by GALL/SRP. If the applicant will use a different program for selected components, that is covered in Table 2.x (see Example C).
- This table provides the row numbers for referencing in Table 2.x. Table 1 is referenced by Table 2.x each time the applicant uses the systematic program to manage the aging effect. This reduces the size of Table 2.x.

Section 3, Table 2.x contains the aging management of each system.
- These tables break down the systems by component.
- One table for each system (or structure).
- The table format is similar to Plant Y format, but with additional information relating to GALL/SRP.
  - Provide component/material/environment/aging effect information similar to Plant Y format.
  - Add information related to GALL and SRP.
    e.g., indicate whether the component/material/environment/aging effect is covered in GALL, and whether the Table 1 aging management will be used.
- This table contains the justification if the component/material/environment is in GALL, but the applicant takes exception to the aging effect in GALL.
- This table contains the justification if the component/material/environment/aging effect is in GALL, but the applicant will use a different aging management than what appears in Table 1 (see Example C).
- This table contains the justification if the component is not in GALL, but the material/environment/aging effect is evaluated elsewhere in GALL and the appropriate Table 1 aging management will be used (see Example D).

The following tables demonstrate how to address the 4 most common situations.

Example A:	Component/material/environment/aging effect is completely consistent with GALL, and aging management will be as specified in Table 1.
Example B:	Component/material/environment is not covered in GALL.
Example C:	Component/material/environment/aging effect is covered in GALL, but applicant chooses to use different aging management than identified in Table 1.
Example D:	Component/material/environment/aging effect is not in GALL, but material/environment/aging effect is covered elsewhere in GALL and the applicant will use applicable Table 1 aging management.

Table 2.3.1 Spent Fuel Pool Cooling and Cleanup Component Types Subjected to Aging Management Review

Component Type	Intended Functions
Filter (housing)	Pressure boundary
Piping	Pressure boundary

Table 3.3.1 Summary of Aging Management for Auxiliary Systems Components/Materials/Environments/Aging Effects/Aging Mechanisms that are Evaluated in GALL

Row Number	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1.01	Components in spent fuel pool cooling and cleanup	Loss of material due to general, pitting, and crevice corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated	The aging management review results are consistent with those in NUREG-1801. Aging management is by the chemistry program and the one-time inspection program. Further evaluation of the chemistry program is provided by a one-time inspection of susceptible locations, as recommended in NUREG-1801, Sections 3.3.2.2.1.1 and 3.3.2.2.2.2, as discussed below.

Further evaluation of aging effects for Item 3.3.1.01.

To manage the effects of loss of material due to general, pitting, and crevice corrosion, the water chemistry program relies on control of primary water chemistry based on EPRI guidelines of TR-105714 and secondary water chemistry based on TR-102134. However, high concentrations of impurities at crevices and locations of stagnant flow could cause general, pitting, or crevice corrosion. Therefore, a one-time inspection of selected components at susceptible locations (i.e., in crevices and locations of stagnant flow) will be used to augment the chemistry program. This is consistent with the NUREG-1801, Sections 3.3.2.2.1.1 and 3.3.2.2.2.2.

Table 3.3.2.1 Spent Fuel Pool Cooling and Cleanup
Summary of Aging Management

	Component	Function	Material	Environment	Aging Effect	GALL Item	SRP Item	AMP	Discussion
Example A	Filter (housing)	PB	Carbon steel	Chemically treated borated water	Loss of Material	VII a3.2-a	3.3.1.01	Chemistry Program One Time Inspection	Aging management is discussed in item 3.3.1.01.
Example B	Filter (housing)	PB	Stainless steel	Chemically treater borated water <140 degrees	Loss of Material			Chemistry Program One Time Inspection	This material and environment grouping are not included in NUREG 1801. The aging management programs are appropriate for the identified aging effects.
Example C	Filter (housing)	PB	Carbon steel with elastomer lining	Chemically treated borated water	Loss of Material	VII.A3.2-a		Maintenance Program	This item is similar to GALL Item VII.A3.2-a with respect to material, environment, and aging effect. However, the Maintenance Program is used instead of Item 3.3.1.01. The Maintenance Program will adequately manage the aging effects because ...
Example D	Piping	PB	Carbon steel with stainless steel cladding	Chemically treated borated water	Loss of Material	VII.A4.2-a* *see discussion	3.3.1.01* *see discussion	Chemistry Program One Time Inspection	This item is not included in GALL; however, the material, environment, and aging effect are similar to GALL item VII.A4.2-a. The aging management is consistent with GALL Item VII.A4.2-a and SRP Item 3.3.1.01.

Operating Experience

The plant specific operating experience was reviewed and it revealed that degradation has occurred in the containment liner at elevation 8 foot due to the poor moisture barrier that was installed resulting in general corrosion and pitting. The moisture barrier was replaced. Several mechanical penetrations inside Unit 1 & Unit 2 containments have shown indications of general corrosion and or peeling paint. Corrosion was found in Containment Sump A at the interface between the containment liner plate and containment floor slab. During Unit 2 tendon gallery inspection it was noted that there was an area of honeycomb and concrete degradation at the ID wall to floor joint.

Inspections performed on the containment tendons have discovered the following degradations to be present:

- Broken wires,
- Wires with less than expected prestress found,
- Presence of nitrates in grease,
- Cracked button-head, missing button-heads,
- Tendon void of 9.7% of volume of grease,
- More grease added than removed in many instances.

Therefore, as demonstrated by the above findings, it can be reasonably assured that the inspections performed will continue to discover and correct any degradation prior to it affecting the components intended function throughout the period of extended operation.

This element is consistent with the three corresponding NRC GALL Report aging management program elements.

Demonstration

Containment leak-tight verification and visual examination of the steel components and concrete components that are part of the leak tight barrier have been conducted at the plant since initial start-up. These examinations are performed in accordance with the ASME Section XI, Subsection IWE & IWL. In addition, leak rate testing is performed in accordance with 10 CFR Part 50 Appendix J. As part of the IWL inspection program, the tendon wires that supply the prestressing forces on the containment concrete structure are examined and tested. The visual inspections verify the condition of all anchorage components and examine for corrosion, pitting, cracking, distortion, presence of water, and other indications. The surrounding concrete is also examined. The combination of these inspections and tests are conducted to verify that the primary reactor containment will continue to perform its intended function.

To date, the past and present implementing procedures that support this program have been effective in maintaining the intended functions of the components that make up the containment structure. NRC Inspection Reports, QA Audit Reports, Work Monitoring Reports and Self-Assessments since 1999 were reviewed to determine the effectiveness of the core procedures that comprise the ASME Section XI, Subsection IWE & IWL Inservice Inspection Program. No deficiencies with the core procedures were noted during this review.

Plant specific operating experience has shown that degradation has occurred. For example, tendon wires have failed, missing or broken components have been found in the tendon hardware, degraded concrete in the containment structure has been found, corrosion has been found on the containment liner, containment penetrations have shown evidence of corrosion. Also industry operating experience and NRC information notices have documented areas of concern when performing containment liner plate inspections and concrete inspections. Plant personnel evaluate these concerns and adjust the ISI accordingly.

Based upon the above, the implementation of the ASME Section XI, Subsection IWE & IWL Inservice Inspection Program provides reasonable assurance that aging effects will be managed such that containment structures and components within the scope of license renewal will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

B1.2.3 ASME Section XI, Subsection IWF Inservice Inspection Program

LR-AMP-027-IWF Revision 0 (DRAFT IIIC)09-12-02

Program Description

The ASME Section XI, Subsection IWF Inservice Inspection Program manages aging effects for supports of Class 1, 2, 3, and MC piping and components. The primary inspection method employed is visual examination. Degradation that potentially compromises the function or load capacity of the support, including bolting, is identified for evaluation. Criteria for acceptance and corrective action are in accordance with Subsection IWF. Supports requiring corrective action are re-examined during the next inspection period.

NUREG-1801 Consistency

The ASME Section XI, Subsection IWF Inservice Inspection Program is an existing program that is consistent with, but includes exceptions to, the NRC Generic Aging Lessons Learned (GALL) Report, Section XI.S3, "ASME Section XI, Subsection IWF" (Reference 3).

Exceptions to NUREG-1801

The exception to the GALL program is that the program is in accordance with ASME Section XI, Subsection IWF, 1998 edition through 2000 addenda, during the fourth ten year interval, which begins July, 2002 for both Units 1 and 2. The GALL evaluation assumed the 1989 through the 1995 edition and addenda through the 1996 Addenda.

Enhancements

Summary Needed

Enhancements are scheduled for completion prior to the period of extended operation.

Operating Experience

A review of industry and plant–specific operating experience was conducted. The industry operating experience database contained only two entries related to the ASME Section XI Subsection IWF Inservice Inspection Program. NRC Information Notice 80-36 notified utilities of the potential for stress corrosion cracking (SCC) of high strength component support bolts. Detection of cracking is not within the scope of the ASME Section XI Subsection IWF Inservice Inspection Program. Corrosion of supports has been identified by the IWF Inspection Program at other nuclear plants, particularly in supports located outdoors at saltwater-cooled plants (Reference 3).

No records were found in the plant-specific operating experience database relevant to the ASME Section XI Subsection IWF Inservice Inspection Program. Anecdotally, the most common relevant condition discovered by the ASME Section XI Subsection IWF Inservice Inspection Program has been loose fasteners in supports. Loose fasteners are a maintenance issue, rather than a sign of age-related degradation.

To date, IWF sampling examinations have been effective in managing aging effects for ASME Class 1, 2, 3 and MC supports. There is reasonable assurance that the Subsection IWF inspection program will be effective through the period of extended operation.

This element is consistent with the corresponding NRC GALL Report aging management program element.

Demonstration

The ASME Section XI, Subsection IWF Inservice Inspection Program has been effective in managing the aging effect of loss of material due to corrosion, erosion, and wear. The program has been enhanced as a result of Quality Assurance audit findings. The Corrective Action Program documented the following issues:

- The management of the ASME Section XI Program was weak in assigning individual responsibilities, providing resources to ensure programs are revised/updated when needed, and providing for personnel training.
- Fragmented involvement of numerous NPBU groups combined with weak interface procedures and the lack of a designated owner weakens the implementation of individual subprograms.

The recommendations to remedy these issues were:

- Develop/change procedures as necessary to fully implement the Inservice Inspection (ISI) and Repair/Replacement Programs as described by ASME Section XI.
- Establish a single group to implement the ASME Section XI and all other piping programs.

This issue was closed by the implementation of a Recovery Plan.

A 1999 NRC Inspection Report contained a finding related to inservice inspection of component supports. The NRC inspection team found two pipe supports in the Auxiliary Feedwater pump room that had gaps between the baseplate and the concrete wall that exceeded the criteria specified. The NRC inspection team concluded that the plant was appropriately evaluating and prioritizing the identified support gaps.

Another 1999 NRC Inspection Report documented an inspection of the Inservice Inspection Program. No violations were identified, and the implementation of the program was found to meet ASME Code Requirements. No specific activities related to examination of component supports were evaluated during the NRC inspection; however, these activities are part of the overall Inservice Inspection program, which was found to be in compliance with regulatory requirements.

Based upon the above, the implementation of the ASME Section XI, Subsection IWF Inservice Inspection Program provides reasonable assurance that aging effects will be managed such that supports of Class 1, 2, 3, and MC piping and components within the scope of license renewal will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

B1.2.4 Periodic Surveillance and Preventive Maintenance Program

LR-AMP-004-PSPM Revision 0 (DRAFT IIIB) 05/28/2002

Program Description

The Periodic Surveillance and Preventive Maintenance Program is an existing plant-specific program that consists of the appropriate ten elements described in Branch Technical Position RLSB-1, "Aging Management Review-Generic," which is included in Appendix A of NUREG-1800, "Standard Review Plan for Review of License Renewal

B1.2.2 Section XI, Subsections IWE & IWL Inservice Inspection Program

LR-AMP-028-IWEL Revision 0 (DRAFT IIIC) 9-10-2002

Program Description

The ASME Section XI, Subsections IWE & IWL Inservice Inspection Program manages aging of (a) steel liners of concrete containments and their integral attachments; containment hatches and airlocks; seals, gaskets and moisture barriers; and pressure retaining bolting, and (b) reinforced concrete containments and unbonded post tensioning systems. The primary inspection methods employed are visual examinations with limited supplemental volumetric and surface examinations, as necessary. Tendon anchorages and wires are visually examined. Tendon wires are tested to verify that minimum mechanical property requirements are met. Tendon corrosion protection medium is analyzed for alkalinity content and soluble ion concentrations. Prestressing forces are measured in sample tendons. Measured tendon lift-off forces are compared to predicted tendon forces calculated in accordance with Regulatory Guide 1.35.1. This program is in accordance with ASME Section XI, Subsections IWE and IWL, 1992 edition including 1992 addenda.

NUREG-1801 Consistency

The ASME Section XI, Subsections IWE & IWL Inservice Inspection Program is an existing program that is consistent with the NRC Generic Aging Lessons Learned (GALL) Report, Section XI.S4 "10CFR50 Appendix J", Section XI.S1 "ASME Section XI, Subsection IWE" and Section XI.S2 "ASME Section XI. Subsection IWL" (Reference 3).

Exceptions to NUREG-1801

None.

Enhancements

Enhancements to the ASME Section XI, Subsections IWE & IWL Inservice Inspection Program include revisions to RMP 9225-4, TS 10, and TS 10A to include more detailed documentation, allowance for adjustment of frequency based on operating experience, and inclusion of methodology for trending and comparison of inspection criteria to acceptance criteria. CLRT Program test results will be documented in accordance with 10 CFR Part 50 Appendix J. The ISI IWL Program document will be revised to clarify that yield strength will also be determined for tendon wire samples.

Enhancements are scheduled for completion prior to the period of extended operation.

Applications for Nuclear Power Plants" (Ref. 9.18). The Periodic Surveillance and Preventive Maintenance Program manages aging effects for SSCs within the scope of license renewal. The program provides for visual inspection and examination of surfaces of selected equipment items and components, including fasteners, for evidence of defects and age-related degradation on a specified frequency based on operating experience. Leak inspections of piping and components in selected portions of systems are also performed on a specified frequency. Additionally, the program provides for replacement or refurbishment of certain components on a specified frequency based on operating experience. The Periodic Surveillance and Preventive Maintenance Program is also used to verify the effectiveness of other aging management programs.

Aging Management Program Elements

The key elements aging management activities, which are used in the Periodic Surveillance and Preventive Maintenance Program, are described below. The results of an evaluation of each key element against the appropriate ten elements described in Branch Technical Position RLSB-1, "Aging Management Review-Generic," which is included in Appendix A of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (Ref. 9.18), is also provided below.

NUREG-1801 Consistency

This program is a plant specific Program

Exceptions to NUREG-1801

This program is a plant specific Program

Enhancements

Under development

Enhancements are scheduled for completion prior to the period of extended operation.

Scope of Program

The Periodic Surveillance and Preventive Maintenance Program manages aging effects for SSCs within the scope of license renewal. The program provides for visual inspection and examination of surfaces of selected equipment items and components, including fasteners, for evidence of defects and age-related degradation on a specified frequency based on operating experience. Leak inspections of piping and components in selected

portions of systems are also performed on a specified frequency. Additionally, the program provides for replacement or refurbishment of certain components on a specified frequency based on operating experience. The Periodic Surveillance and Preventive Maintenance Program is also used to verify the effectiveness of other aging management programs.

This element is consistent with the corresponding element described in the Branch Technical Position.

Preventive Actions

The Periodic Surveillance and Preventive Maintenance Program is a condition monitoring program. There are no preventive measures associated with the aging effects of concern for license renewal. The visual inspection and examination of surfaces of selected equipment items and components, including fasteners, and leak inspections of piping and components in selected portions of systems on a specified frequency are intended to identify the extent to which aging effects are occurring (i.e. condition). The replacement or refurbishment of certain components on a specified frequency does not prevent aging effects from occurring. These components are replaced or refurbished on a given frequency based on operating experience.

This element is consistent with the corresponding element described in the Branch Technical Position.

Parameters Monitored, Inspected, and/or Tested

Surface conditions of selected equipment items and components, including fasteners, are monitored through visual inspection and examination for evidence of defects and age-related degradation on a specified frequency based on operating experience. Piping and components in selected portions of systems are monitored through visual inspection for evidence of leaks on a specified frequency. Certain components are replaced or refurbished on a given frequency based on operating experience.

This element is consistent with the corresponding element described in the Branch Technical Position.

Detection of Aging Effects

The aging effects of concern will be detected by visual inspection and examination of surfaces of selected equipment items, piping and components, including fasteners, for evidence of defects and age-related degradation. Guidelines provided in the Westinghouse Aging Assessment Field Guides (Ref. 9.11) may be used as an aid in the identification of undesirable conditions.

This element is consistent with the corresponding element described in the Branch Technical Position.

Monitoring and Trending

The Periodic Surveillance and Preventive Maintenance Program is a condition monitoring program. Detailed material surface condition and leakage inspections and examinations, and component replacement or refurbishment activities are performed on a specified frequency based on operating experience. The results of these surveillance and preventive maintenance activities are documented, and subject to review and approval.

The periodicity of most surveillance and preventive maintenance activities that are credited for license renewal will usually be driven by considerations other than aging, since the effects of aging usually occur slowly over time. For example, a check valve internal inspection is more likely to be driven by seat/ disc/hinge pin wear than by erosion or corrosion of the valve body. Therefore, the specified frequencies of surveillance and preventive maintenance activities credited for license renewal may be adjusted or the performance of these activities deferred subject to the following constraints.

The frequency of surveillance and preventive maintenance activities that are credited for license renewal may be adjusted provided an engineering evaluation is performed justifying the revised frequency based on plant and industry operating experience.

This element is consistent with the corresponding element described in the Branch Technical Position.

Acceptance Criteria

Acceptance criteria for visual inspection and examination of surfaces of selected equipment items and components, including fasteners, and leak inspections of piping and components in selected portions of systems are provided in the surveillance and preventive maintenance activities credited for license renewal. The acceptance criteria are related to the aging effect(s) of concern and are tailored to each individual inspection and examination considering the aging effect(s) being managed. An Action Request shall be initiated for any condition that does not satisfy the acceptance criteria.

This element is consistent with the corresponding element described in the Branch Technical Position.

Corrective Actions

Corrective actions are implemented in accordance with the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (Ref. 9.8), and ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 9.10),as committed in the FSAR (Ref. 9.12). Provisions for timely evaluation of adverse conditions and implementation of any corrective actions required, including root cause determinations and prevention of recurrence where appropriate, are included in the corrective action program.

Corrective actions are implemented through the initiation of an Action Request in accordance with NP 5.3.1, "Action Request Process" (Ref. 9.9). Equipment deficiencies are corrected through the initiation of a Work Order in accordance with NP 10.2.4, "Work Order Processing" (Ref. 9.7). The results of an evaluation of these corrective action procedures are documented in a formal Evaluation of Quality Assurance Program Attributes (Ref. 9.14).

This element is consistent with the corresponding element described in the Branch Technical Position.

This element is consistent with the corresponding element described in the Branch Technical Position.

Confirmation Process

The confirmation process is part of the corrective action program, which is implemented in accordance with the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (Ref. 9.8), and ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 9.10), as committed in the FSAR (Ref. 9.12). The aging management activities required by this program would also uncover any unsatisfactory condition due to ineffective corrective action.

NP 5.3.1, "Action Request Process" (Ref. 9.9), includes provisions for tracking, coordinating, monitoring, reviewing, verifying, validating, and approving corrective actions, to ensure effective corrective actions are taken. The Action Request Process is also monitored for potentially adverse trends. The existence of an adverse trend due to recurring or repetitive adverse conditions will result in the initiation of an Action Request. NP 10.2.7, "Post-Maintenance / Return to Service Testing" (Ref. 9.13), includes provisions for verifying the completion and effectiveness of corrective actions for equipment deficiencies. NP 10.2.7 establishes criteria for the selection and documentation of Post-Maintenance Tests (PMTs), guidelines to ensure equipment will perform its intended function prior to return to service, and guidelines to ensure the original equipment deficiency is corrected and a new deficiency has not been created. The results of an evaluation of these confirmation process procedures are documented in a formal Evaluation of Quality Assurance Program Attributes (Ref. 9.14).

This element is consistent with the corresponding element described in the Branch Technical Position.

Administrative Controls

The Periodic Surveillance and Preventive Maintenance Program is implemented through various plant administrative procedures. These implementing documents are subject to administrative controls, including a formal review and approval process, in accordance with the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (Ref. 9.8), and ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 9.10),as committed in the FSAR (Ref. 9.12).

Various procedures provide the required administrative controls, including a formal review and approval process, for procedures and other forms of administrative control documents. The results of an evaluation of these administrative control procedures are documented in a formal Evaluation of Quality Assurance Program Attributes (Ref. 9.14).

This element is consistent with the corresponding element described in the Branch Technical Position.

Operating Experience

The Periodic Surveillance and Preventive Maintenance Program has been effective in maintaining the intended functions of long-lived passive SSCs, with an improving trend noted in the internal and external assessments performed over the past several years. Although the preventive maintenance program for non-ASME Code and non-Technical Specification required equipment is not fully developed, preventive maintenance activities entered in CHAMPS are effectively implemented. Many Condition Reports, Action Requests and Work Orders have been generated and resolved through the implementation of this program, which demonstrates the effectiveness of this program to identify and correct age-related degradation prior to a loss of intended function. The effectiveness of this program is also demonstrated by the level of system/equipment availability as documented via the Maintenance Rule Periodic Assessments.

This element is consistent with the corresponding element described in the Branch Technical Position.

Demonstration

The Periodic Surveillance and Preventive Maintenance Program is an established program. It uses as its bases various INPO and industry standards, including ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 9.10).

The Periodic Surveillance and Preventive Maintenance Program has been effective in maintaining the intended functions of long-lived passive SSCs, with an improving trend noted in the internal and external assessments performed over the past several years. Although the preventive maintenance program for non-ASME Code and non-Technical Specification required equipment is not fully developed, preventive maintenance activities entered in CHAMPS are effectively implemented. Surveillance and preventive maintenance activities credited for license renewal will be specified by call-ups maintained in CHAMPS, flagged as license renewal commitments, and subject to additional requirements and controls as specified by the enhancements listed in

Section 7.0 of this document, including the constraints placed on deferrals, cancellations and frequency changes for license renewal. Therefore, there is reasonable assurance that aging effects will be managed by the Periodic Surveillance and Preventive Maintenance Program such that SSCs within the scope of license renewal will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation. In addition, the Periodic Surveillance and Preventive Maintenance Program is subject to periodic internal and external assessments to insure its effectiveness and continuous improvement.

NRC Inspection Reports, QA Audit/Surveillance Reports, and Self-Assessments since 1999, and the INPO March 2000 Evaluation Report were reviewed to determine the effectiveness of the Periodic Surveillance and Preventive Maintenance Program. Many surveillance and preventive maintenance activities were noted as being effectively performed. However, several areas for improvement were identified with an overall improving trend noted in recent assessments.

PROPOSED LRA FORMAT

The staff believes this format will:

- Support the most efficient staff review,
- Make the best use of the GALL and SRP,
- Improve the clarity of aging management review,
- Reduce the applicant's effort in developing the LRA.

Section 2 tables do not link to Section 3 tables.

Details of the aging management review are in the Section 3 tables, so links are not necessary.

Section 3, Table 1 contains a summary of the information in the SRP.

- This table assists the staff review by collecting the information on how the applicant will manage the aging effects (and mechanisms) that are addressed in GALL.
- This table describes the program the applicant will systematically use to manage the aging identified in GALL, including any further evaluation recommended by GALL/SRP. This table will identify whether the applicant intends to systematically use the GALL program or another program to manage the aging identified in GALL. This table will also describe how the applicant will further evaluate the aging, as recommended by GALL/SRP. If the applicant will use a different program for selected components, that is covered in Table 2.x (see Example C).
- This table provides the row numbers for referencing in Table 2.x. Table 1 is referenced by Table 2.x each time the applicant uses the systematic program to manage the aging effect. This reduces the size of Table 2.x.

Section 3, Table 2.x contains the aging management of each system.

- These tables break down the systems by component.
- One table for each system (or structure).
- The table format is similar to Plant Y format, but with additional information relating to GALL/SRP.
  - Provide component/material/environment/aging effect information similar to Plant Y format.
  - Add information related to GALL and SRP.
    e.g., indicate whether the component/material/environment/aging effect is covered in GALL, and whether the Table 1 aging management will be used.
- This table contains the justification if the component/material/environment is in GALL, but the applicant takes exception to the aging effect in GALL.
- This table contains the justification if the component/material/environment/aging effect is in GALL, but the applicant will use a different aging management than what appears in Table 1 (see Example C).
- This table contains the justification if the component is not in GALL, but the material/environment/aging effect is evaluated elsewhere in GALL and the appropriate Table 1 aging management will be used (see Example D).

The following tables demonstrate how to address the 4 most common situations.

Example A:	Component/material/environment/aging effect is completely consistent with GALL, and aging management will be as specified in Table 1.
Example B:	Component/material/environment is not covered in GALL.
Example C:	Component/material/environment/aging effect is covered in GALL, but applicant chooses to use different aging management than identified in Table 1.
Example D:	Component/material/environment/aging effect is not in GALL, but material/environment/aging effect is covered elsewhere in GALL and the applicant will use applicable Table 1 aging management.

Table 2.3.1 Spent Fuel Pool Cooling and Cleanup Component Types Subjected to Aging Management Review

Component Type	Intended Functions
Filter (housing)	Pressure boundary
Piping	Pressure boundary

Table 3.3.1 Summary of Aging Management for Auxiliary Systems Components/Materials/Environments/Aging Effects/Aging Mechanisms that are Evaluated in GALL

Row Number	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1.01	Components in spent fuel pool cooling and cleanup	Loss of material due to general, pitting, and crevice corrosion	Water chemistry and one-time inspection	Yes, detection of aging effects is to be further evaluated	The aging management review results are consistent with those in NUREG-1801. Aging management is by the chemistry program and the one-time inspection program. Further evaluation of the chemistry program is provided by a one-time inspection of susceptible locations, as recommended in NUREG-1801, Sections 3.3.2.2.1.1 and 3.3.2.2.2.2, as discussed below.

Further evaluation of aging effects for Item 3.3.1.01.

To manage the effects of loss of material due to general, pitting, and crevice corrosion, the water chemistry program relies on control of primary water chemistry based on EPRI guidelines of TR-105714 and secondary water chemistry based on TR-102134. However, high concentrations of impurities at crevices and locations of stagnant flow could cause general, pitting, or crevice corrosion. Therefore, a one-time inspection of selected components at susceptible locations (i.e., in crevices and locations of stagnant flow) will be used to augment the chemistry program. This is consistent with the NUREG-1801, Sections 3.3.2.2.1.1 and 3.3.2.2.2.2.

Table 3.3.2.1 Spent Fuel Pool Cooling and Cleanup Summary of Aging Management

	Component	Function	Material	Environment	Aging Effect	GALL Item	SRP Item	AMP	Discussion
Example A	Filter (housing)	PB	Carbon steel	Chemically treated borated water	Loss of Material	VII a3.2-a	3.3.1.01	Chemistry Program One Time Inspection	Aging management is discussed in item 3.3.1.01.
Example B	Filter (housing)	PB	Stainless steel	Chemically treater borated water <140 degrees	Loss of Material			Chemistry Program One Time Inspection	This material and environment grouping are not included in NUREG 1801. The aging management programs are appropriate for the identified aging effects.
Example C	Filter (housing)	PB	Carbon steel with elastomer lining	Chemically treated borated water	Loss of Material	VII.A3.2-a		Maintenance Program	This item is similar to GALL Item VII.A3.2-a with respect to material, environment, and aging effect. However, the Maintenance Program is used instead of Item 3.3.1.01. The Maintenance Program will adequately manage the aging effects because ...
Example D	Piping	PB	Carbon steel with stainless steel cladding	Chemically treated borated water	Loss of Material	VII.A4.2-a* *see discussion	3.3.1.01* *see discussion	Chemistry Program One Time Inspection	This item is not included in GALL; however, the material, environment, and aging effect are similar to GALL item VII.A4.2-a. The aging management is consistent with GALL Item VII.A4.2-a and SRP Item 3.3.1.01.